Annihilators and power values of generalized skew derivations on Lie ideals

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Abstract. Let R be a prime ring of characteristic different from 2, Q_r be its right Martindale quotient ring and C be its extended centroid. Suppose that F is a generalized skew derivation of R, L a non-central Lie ideal of R, $0 \neq a \in R$, $m \geq 0$ and $n, s \geq 1$ fixed integers. If

$$a\left(u^m F(u) u^n \right)^s = 0$$

for all $u \in L$, then either $R \subseteq M_2(C)$, the ring of 2×2 matrices over C, or $m = 0$ and there exists $b \in Q_r$ such that $F(x) = bx$, for any $x \in R$, with $ab = 0$.